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(54) Title: IMPROVEMENTS IN OR RELATING TO DISINFECTING MATERIALS

(57) Abstract

The invention provides a system for disinfecting a germ carrying body which system comprises two components wherein the first component comprises a disinfectant precursor and the second component comprises a compound which, on admixture with the first component, reacts with the precursor to form a disinfectant; wherein either component includes a substance which exhibits a colour change after a period of time has elapsed, subsequent to the application of the material to the body, which is at least as long as the time required for the material to disinfect the body.

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Improvements in or relating to disinfecting materials

This invention relates to disinfecting materials and more particularly, but not exclusively, is concerned with toilet cleaners for disinfecting toilet bowls and the like.

Toilet cleaners are purchased by customers with a view to killing germs in the toilet bowl and also removing limescale and other stains. Typically, conventional toilet cleaners are based on sodium hypochlorite or hydrochloric acid and, although these are effective germ killers, they do not provide any indication that germs have been killed and hence the customers cannot readily perceive that the cleaners have fulfilled their purpose in this respect.

It is an object of the present invention to provide a material which will disinfect toilet bowls and other bodies whilst also providing an indication that it has carried out its germ killing function.

According to the present invention there is provided a system for disinfecting a germ carrying body which system comprises two components wherein

the first component comprises a disinfectant precursor and

the second component comprises a compound which, on admixture with the first component, reacts with the precursor to form a disinfectant;

wherein either component includes a substance which exhibits a colour change after a period of time has elapsed, subsequent to the application of the material

to the body, which is at least as long as the time required for the material to disinfect the body.

Preferably, the substance exhibiting the colour change is a bleachable dye, particularly a dye which is bleachable by the disinfectant. The substance is preferably present in admixture with the first component.

Preferably the first component comprises the precursor in an amount of from 0.001 to 20 %, more preferably from 0.01 to 5 %, most preferably from 0.1 to 1 % by weight of the first component; the second component comprises the compound in an amount of from 0.001 to 20 %, more preferably from 0.01 to 5 %, most preferably from 0.05 to 1 %, by volume of the second component; and one or more of the components comprises the substance in an amount of from 0.0001 to 2 %, more preferably from 0.001 to 0.5 %, most preferably from 0.01 to 0.1 %, by weight of the component(s) in which the substance is present.

Preferably each component is in the form of an aqueous solution. Optionally each component additionally comprises additives such as stabilisers, buffers, preservatives, viscosity modifiers, perfumes and/or surfactants.

Suitable dyes are as follows:-

C.I. Acid Blue 182, such as Sandolan Blue E-HRL supplied by Clariant;

C.I. Acid Blue 80, an anthraquinone dyestuff, such as Sandolan Milling Blue N-BL;

C.I. Reactive Blue 113, such as Drimarene Blue K3GL supplied by Clariant;

C.I. Reactive Blue 114 such as Drimarene Brilliant Blue K-BL;

Azo/copper complex dyestuffs such as Cartasol Blue GDF supplied by Clariant;

Anionic azo-dyes such as Cartasol Brilliant Violet 5BF.

A suitable bleaching agent which is formable from the two components is chlorine dioxide. In this case, a suitable precursor is an alkali metal chlorite, preferably sodium chlorite which, when admixed with an acid such as hydrochloric acid, sulphamic acid or citric acid (preferably hydrochloric acid is used), generates the chlorine dioxide.

According to a preferred embodiment of the invention the system is in the form of a container comprising:

a first compartment for said first component,

a second compartment for said second component,

a first outlet for egress of a stream of first component from said first compartment, and

a second outlet for egress of a stream of said second component from said second compartment, said outlets being arranged such that the streams impinge on one another and the first and second components become admixed together when the components are poured from the container.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawing which shows a schematic cross

section through a container in accordance with the invention.

Referring to the drawing, the container is a double container comprising a first compartment 1 and a second compartment 2. The compartments 1 and 2 have separate outlets 3 and 4 at the neck of the container and the container includes a common dividing wall 5 which extends beyond the outlets 3 and 4 to form a baffle 6. Both outlets 3 and 4 are sealed by a cap 7 threadingly connected to the neck of the container. Separate first and second components are accommodated in the first and second compartments 1 and 2 and are retained by the cap 7.

In use, the cap 7 is unscrewed and the container is tilted so that a stream of the first component leaves the first compartment 1 via the first outlet 3 and a stream of the second component leaves the second compartment 2 via the second outlet 4. The baffle 6 assists in causing these streams to intermingle and form a single stream of the mixed components.

The following Example illustrates the invention.

Example

A first component comprising an aqueous solution of sodium chlorite in an amount of 1% by weight of the first component and sufficient (0.02 % by weight) of the blue dye C.I. Acid Blue 182 to provide the first component with a blue colour was introduced into the first compartment 1 of a container as shown in the drawing. A second component comprising an aqueous colourless solution of hydrochloric acid in an amount

of 1% by volume of the second component was introduced into the second compartment 2 of the container.

On pouring some (about 20 ml which consisted of about 10 ml of each component) of the contents from the container into a toilet bowl, the streams of the first and second components intermingled to form a blue mixture prior to reaching the toilet bowl. The mixture reacted to form chlorine dioxide (ClO_2). This is an efficient germ killer and within 10 minutes it had disinfected the toilet bowl. It is known from microbiological tests that 10 minutes is a sufficient period of time for this amount of ClO_2 to disinfect a toilet bowl.

Within 15 minutes of the mixing together of the first and second components, the blue mixture had become colourless as the chlorine dioxide had completely bleached the blue dye. Thus the user could readily perceive that the material had killed the germs in the toilet bowl.

CLAIMS

1. A system for disinfecting a germ carrying body which system comprises two components wherein the first component comprises a disinfectant precursor and

the second component comprises a compound which, on admixture with the first component, reacts with the precursor to form a disinfectant;

wherein either component includes a substance which exhibits a colour change after a period of time has elapsed, subsequent to the application of the material to the body, which is at least as long as the time required for the material to disinfect the body.

2. A system according to claim 1 wherein said substance is a dye bleachable by the disinfectant.

3. A system according to claim 1 or claim 2 wherein the first component comprises the precursor in an amount of from 0.001 to 20 % by weight of the first component, the second component comprises the compound in an amount of from 0.001 to 20 % by volume of the second component and one or more of the components comprises the substance in an amount of from 0.0001 to 2 %, by weight of the component(s) in which the substance is present.

4. A system according to any one of the preceding claims wherein the precursor is an alkali metal chlorite, the compound is an acid, the disinfectant is chlorine dioxide, the substance is a bleachable dye which is in admixture with the first component, and each component is in the form of an aqueous solution.

5. A system according to any one of the preceding claims which is in the form of a container comprising:

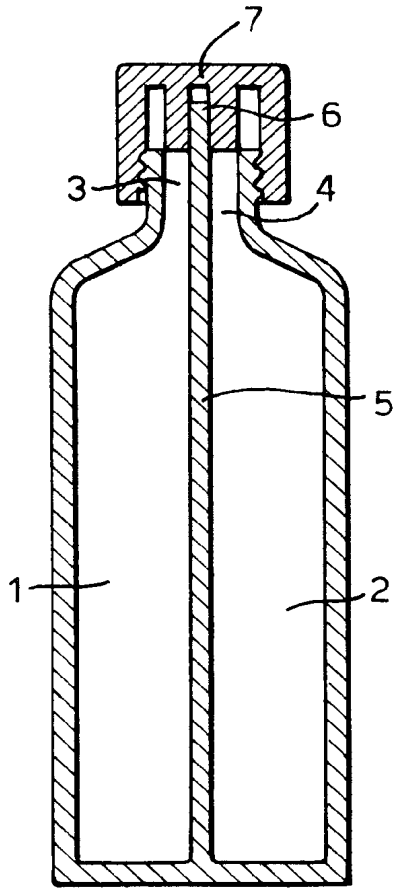
a first compartment for said first component,

a second compartment for said second component,

a first outlet for egress of a stream of first component from said first compartment, and

a second outlet for egress of a stream of said second component from said second compartment, said outlets being arranged such that the streams impinge on one another and the first and second components become admixed together when the components are poured from the container.

6. A container according to claim 5 substantially as hereinbefore described in the accompanying drawing.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INTERNATIONAL SEARCH REPORT

rnational Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A01N59/00 A61L2/18 C11D3/48 //(A01N59/00,61:00,59:00)

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A01N A61L C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 90 08558 A (TRANS DELTA CORP) 9 August 1990 see page 5, line 21 - line 34 see page 6, line 13 - page 7, line 10 see page 7, line 33 - page 8, line 4 see page 11, line 35 - page 12, line 20 see page 14, line 23 - page 15, line 22	1-3
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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